

# Michael P Hannigan

## List of Publications by Year in descending order

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110  
papers

4,945  
citations

101543

36  
h-index

114465

63  
g-index

116  
all docs

116  
docs citations

116  
times ranked

5888  
citing authors

#	ARTICLE	IF	CITATIONS
1	Collocated speciation of PM <sub>2.5</sub> using tandem quartz filters in northern nanjing, China: Sampling artifacts and measurement uncertainty. <i>Atmospheric Environment</i> , 2021, 246, 118066.	4.1	14
2	A glimpse into real-world kitchens: Improving our understanding of cookstove usage through in-field photo-observations and improved cooking event detection (CookED) analytics. <i>Development Engineering</i> , 2021, 6, 100065.	1.8	5
3	Improving Air Pollutant Metal Oxide Sensor Quantification Practices through: An Exploration of Sensor Signal Normalization, Multi-Sensor and Universal Calibration Model Generation, and Physical Factors Such as Co-Location Duration and Sensor Age. <i>Atmosphere</i> , 2021, 12, 645.	2.3	5
4	Characterizing methane and total non-methane hydrocarbon levels in Los Angeles communities with oil and gas facilities using air quality monitors. <i>Science of the Total Environment</i> , 2021, 777, 146194.	8.0	14
5	Photochemical Aging of Atmospheric Particulate Matter in the Aqueous Phase. <i>Environmental Science &amp; Technology</i> , 2021, 55, 13152-13163.	10.0	14
6	Applications and Limitations of Quantifying Speciated and Source-Apportioned VOCs with Metal Oxide Sensors. <i>Atmosphere</i> , 2021, 12, 1383.	2.3	1
7	Health impacts of a randomized biomass cookstove intervention in northern Ghana. <i>BMC Public Health</i> , 2021, 21, 2211.	2.9	3
8	Iron Speciation in PM <sub>2.5</sub> From Urban, Agriculture, and Mixed Environments in Colorado, USA. <i>Earth and Space Science</i> , 2020, 7, e2020EA001262.	2.6	8
9	Using gas-phase air quality sensors to disentangle potential sources in a Los Angeles neighborhood. <i>Atmospheric Environment</i> , 2020, 233, 117519.	4.1	14
10	Predicting Photovoltaic Soiling From Air Quality Measurements. <i>IEEE Journal of Photovoltaics</i> , 2020, 10, 1142-1147.	2.5	16
11	Attributing Air Pollutant Exposure to Emission Sources with Proximity Sensing. <i>Atmosphere</i> , 2019, 10, 395.	2.3	10
12	Kitchen Area Air Quality Measurements in Northern Ghana: Evaluating the Performance of a Low-Cost Particulate Sensor within a Household Energy Study. <i>Atmosphere</i> , 2019, 10, 400.	2.3	10
13	Exposures to Carbon Monoxide in a Cookstove Intervention in Northern Ghana. <i>Atmosphere</i> , 2019, 10, 402.	2.3	7
14	Using A Low-Cost Sensor Array and Machine Learning Techniques to Detect Complex Pollutant Mixtures and Identify Likely Sources. <i>Sensors</i> , 2019, 19, 3723.	3.8	25
15	Evaluating and improving the reliability of gas-phase sensor system calibrations across new locations for ambient measurements and personal exposure monitoring. <i>Atmospheric Measurement Techniques</i> , 2019, 12, 4211-4239.	3.1	21
16	Deliberating performance targets workshop: Potential paths for emerging PM <sub>2.5</sub> and O <sub>3</sub> air sensor progress. <i>Atmospheric Environment: X</i> , 2019, 2, 100031.	1.4	36
17	Updated Emission Factors from Diffuse Combustion Sources in Sub-Saharan Africa and Their Effect on Regional Emission Estimates. <i>Environmental Science &amp; Technology</i> , 2019, 53, 6392-6401.	10.0	5
18	Adoption of improved biomass stoves and stove/fuel stacking in the REACTING intervention study in Northern Ghana. <i>Energy Policy</i> , 2019, 130, 361-374.	8.8	47

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19	Understanding the ability of low-cost MOx sensors to quantify ambient VOCs. Atmospheric Measurement Techniques, 2019, 12, 1441-1460.	3.1	40
20	Enhanced Photovoltaic Soiling In An Urban Environment. , 2019, , .		6
21	Performance of artificial neural networks and linear models to quantify 4 trace gas species in an oil and gas production region with low-cost sensors. Sensors and Actuators B: Chemical, 2019, 283, 504-514.	7.8	52
22	Light absorption of organic carbon and its sources at a southeastern U.S. location in summer. Environmental Pollution, 2019, 244, 38-46.	7.5	48
23	Multi-Group Encoder-Decoder Networks to Fuse Heterogeneous Data for Next-Day Air Quality Prediction. , 2019, , .		27
24	Low-cost measurement techniques to characterize the influence of home heating fuel on carbon monoxide in Navajo homes. Science of the Total Environment, 2018, 625, 608-618.	8.0	9
25	Testing the performance of field calibration techniques for low-cost gas sensors in new deployment locations: across a county line and across Colorado. Atmospheric Measurement Techniques, 2018, 11, 6351-6378.	3.1	21
26	Prices, peers, and perceptions (P3): study protocol for improved biomass cookstove project in northern Ghana. BMC Public Health, 2018, 18, 1209.	2.9	7
27	Community-Based Health and Exposure Study around Urban Oil Developments in South Los Angeles. International Journal of Environmental Research and Public Health, 2018, 15, 138.	2.6	31
28	Liquified Petroleum Gas (LPG) Supply and Demand for Cooking in Northern Ghana. EcoHealth, 2018, 15, 716-728.	2.0	33
29	Intra-urban spatial variability of surface ozone in Riverside, CA: viability and validation of low-cost sensors. Atmospheric Measurement Techniques, 2018, 11, 1777-1792.	3.1	31
30	Comparing Building and Neighborhood-Scale Variability of CO2 and O3 to Inform Deployment Considerations for Low-Cost Sensor System Use. Sensors, 2018, 18, 1349.	3.8	11
31	Assessing a low-cost methane sensor quantification system for use in complex rural and urban environments. Atmospheric Measurement Techniques, 2018, 11, 3569-3594.	3.1	38
32	Improving present day and future estimates of anthropogenic sectoral emissions and the resulting air quality impacts in Africa. Faraday Discussions, 2017, 200, 397-412.	3.2	19
33	New Emission Factors and Efficiencies from in-Field Measurements of Traditional and Improved Cookstoves and Their Potential Implications. Environmental Science & Technology, 2017, 51, 12508-12517.	10.0	67
34	Rural&#x2014;urban differences in cooking practices and exposures in Northern Ghana. Environmental Research Letters, 2017, 12, 065009.	5.2	27
35	Exposures to and origins of carbonaceous PM2.5 in a cookstove intervention in Northern Ghana. Science of the Total Environment, 2017, 576, 178-192.	8.0	22
36	Regional and National Scale Spatial Variability of Photovoltaic Cover Plate Soiling and Subsequent Solar Transmission Losses. IEEE Journal of Photovoltaics, 2017, 7, 1354-1361.	2.5	4

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37	Low-Cost Air Quality Monitoring Tools: From Research to Practice (A Workshop Summary). <i>Sensors</i> , 2017, 17, 2478.	3.8	144
38	Quantifying Neighborhood-Scale Spatial Variations of Ozone at Open Space and Urban Sites in Boulder, Colorado Using Low-Cost Sensor Technology. <i>Sensors</i> , 2017, 17, 2072.	3.8	22
39	Introducing university laboratory tools into K-12 classrooms: Benefits and challenges. , 2017, , .		0
40	Water soluble organic aerosols in the Colorado Rocky Mountains, USA: composition, sources and optical properties. <i>Scientific Reports</i> , 2016, 6, 39339.	3.3	39
41	Assessment of cookstove stacking in Northern Ghana using surveys and stove use monitors. <i>Energy for Sustainable Development</i> , 2016, 34, 67-76.	4.5	64
42	Comparisons of urban and rural PM <sub>10-2.5</sub> and PM <sub>2.5</sub> mass concentrations and semi-volatile fractions in northeastern Colorado. <i>Atmospheric Chemistry and Physics</i> , 2016, 16, 7469-7484.	4.9	28
43	Assessment of PM dry deposition on solar energy harvesting systems: Measurement model comparison. <i>Aerosol Science and Technology</i> , 2016, 50, 380-391.	3.1	38
44	Integrating a K-12 Education and Outreach Initiative into a Sustainability Research Network (Work in Progress)		2
45	On the development and implementation of a project-based learning curriculum for air quality in K-12 schools. , 2015, , .		5
46	Initial results of a five site study comparing spatial variability of soiling and ambient particulate concentrations. , 2015, , .		2
47	The short-term association of selected components of fine particulate matter and mortality in the Denver Aerosol Sources and Health (DASH) study. <i>Environmental Health</i> , 2015, 14, 49.	4.0	21
48	Quantification Method for Electrolytic Sensors in Long-Term Monitoring of Ambient Air Quality. <i>Sensors</i> , 2015, 15, 27283-27302.	3.8	59
49	Natural soiling of photovoltaic cover plates and the impact on transmission. <i>Renewable Energy</i> , 2015, 77, 166-173.	8.9	91
50	Research on Emissions, Air quality, Climate, and Cooking Technologies in Northern Ghana (REACCTING): study rationale and protocol. <i>BMC Public Health</i> , 2015, 15, 126.	2.9	37
51	Development and validation of inexpensive, automated, dynamic flux chambers. <i>Atmospheric Measurement Techniques</i> , 2015, 8, 267-280.	3.1	11
52	Approach for quantification of metal oxide type semiconductor gas sensors used for ambient air quality monitoring. <i>Sensors and Actuators B: Chemical</i> , 2015, 208, 339-345.	7.8	87
53	The next generation of low-cost personal air quality sensors for quantitative exposure monitoring. <i>Atmospheric Measurement Techniques</i> , 2014, 7, 3325-3336.	3.1	206
54	Comparing Multipollutant Emissions-Based Mobile Source Indicators to Other Single Pollutant and Multipollutant Indicators in Different Urban Areas. <i>International Journal of Environmental Research and Public Health</i> , 2014, 11, 11727-11752.	2.6	6

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55	Gas/particle partitioning of n-alkanes, PAHs and oxygenated PAHs in urban Denver. Atmospheric Environment, 2014, 95, 355-362.	4.1	44
56	Impact of Gas/Particle Partitioning of Semivolatile Organic Compounds on Source Apportionment with Positive Matrix Factorization. Environmental Science & Technology, 2014, 48, 9053-9060.	10.0	28
57	Gas/Particle Partitioning of 2-Methyltetrols and Levoglucosan at an Urban Site in Denver. Environmental Science & Technology, 2014, 48, 2835-2842.	10.0	38
58	Concentrations and source insights for trace elements in fine and coarse particulate matter. Atmospheric Environment, 2014, 89, 373-381.	4.1	68
59	Natural and Unnatural Organic Matter in the Atmosphere: Recent Perspectives on the High Molecular Weight Fraction of Organic Aerosol. ACS Symposium Series, 2014, , 87-111.	0.5	1
60	A Hybrid Sensor System for Indoor Air Quality Monitoring. , 2013, , .		33
61	The sensitivity of health effect estimates from time-series studies to fine particulate matter component sampling schedule. Journal of Exposure Science and Environmental Epidemiology, 2013, 23, 481-486.	3.9	8
62	Positive matrix factorization of a 32-month series of daily PM <sub>2.5</sub> speciation data with incorporation of temperature stratification. Atmospheric Environment, 2013, 65, 11-20.	4.1	34
63	Seasonal Variability in Bacterial and Fungal Diversity of the Near-Surface Atmosphere. Environmental Science & Technology, 2013, 47, 12097-12106.	10.0	349
64	Hallway based automatic indoor floorplan construction using room fingerprints. , 2013, , .		93
65	Errors in coarse particulate matter mass concentrations and spatiotemporal characteristics when using subtraction estimation methods. Journal of the Air and Waste Management Association, 2013, 63, 1386-1398.	1.9	8
66	Impact of natural soiling on the transmission of PV cover plates. , 2013, , .		16
67	Characterization of coarse particulate matter in the western United States: a comparison between observation and modeling. Atmospheric Chemistry and Physics, 2013, 13, 1311-1327.	4.9	13
68	Positive matrix factorization of PM <sub>2.5</sub> eliminating the effects of gas/particle partitioning of semivolatile organic compounds. Atmospheric Chemistry and Physics, 2013, 13, 7381-7393.	4.9	41
69	User-Centric Indoor Air Quality Monitoring on Mobile Devices. AI Magazine, 2013, 34, 11.	1.6	10
70	The Temporal Lag Structure of Short-term Associations of Fine Particulate Matter Chemical Constituents and Cardiovascular and Respiratory Hospitalizations. Environmental Health Perspectives, 2012, 120, 1094-1099.	6.0	148
71	ARIEL. , 2012, , .		126
72	Characterization and Nonparametric Regression of Rural and Urban Coarse Particulate Matter Mass Concentrations in Northeastern Colorado. Aerosol Science and Technology, 2012, 46, 108-123.	3.1	21

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73	Collaborative calibration and sensor placement for mobile sensor networks. , 2012, , .		23
74	Positive Matrix Factorization of PM <sub>2.5</sub> : Comparison and Implications of Using Different Speciation Data Sets. Environmental Science & Technology, 2012, 46, 11962-11970.	10.0	42
75	Intra-urban spatial variability of PM <sub>2.5</sub> -bound carbonaceous components. Atmospheric Environment, 2012, 60, 486-494.	4.1	20
76	Intra-urban spatial variability and uncertainty assessment of PM <sub>2.5</sub> sources based on carbonaceous species. Atmospheric Environment, 2012, 60, 305-315.	4.1	18
77	MAQS. , 2011, , .		12
78	MAQS. , 2011, , .		84
79	Temporal patterns in daily measurements of inorganic and organic speciated PM <sub>2.5</sub> in Denver. Atmospheric Environment, 2010, 44, 987-998.	4.1	25
80	Source apportionment using positive matrix factorization on daily measurements of inorganic and organic speciated PM <sub>2.5</sub> . Atmospheric Environment, 2010, 44, 2731-2741.	4.1	50
81	Effects of Plug-In Hybrid Electric Vehicles on Ozone Concentrations in Colorado. Environmental Science & Technology, 2010, 44, 6256-6262.	10.0	36
82	PM <sub>2.5</sub> characterization for time series studies: Pointwise uncertainty estimation and bulk speciation methods applied in Denver. Atmospheric Environment, 2009, 43, 1136-1146.	4.1	45
83	PM <sub>2.5</sub> characterization for time series studies: Organic molecular marker speciation methods and observations from daily measurements in Denver. Atmospheric Environment, 2009, 43, 2018-2030.	4.1	34
84	Source identification of personal exposure to fine particulate matter using organic tracers. Atmospheric Environment, 2009, 43, 1972-1981.	4.1	25
85	The contribution of biological particles to observed particulate organic carbon at a remote high altitude site. Atmospheric Environment, 2009, 43, 4278-4282.	4.1	41
86	Evaluation of retrofit crankcase ventilation controls and diesel oxidation catalysts for reducing air pollution in school buses. Atmospheric Environment, 2009, 43, 5916-5922.	4.1	11
87	Intra-community spatial variation of size-fractionated organic compounds in Long Beach, California. Air Quality, Atmosphere and Health, 2009, 2, 69-88.	3.3	11
88	Characterization of Primary Organic Aerosol Emissions from Meat Cooking, Trash Burning, and Motor Vehicles with High-Resolution Aerosol Mass Spectrometry and Comparison with Ambient and Chamber Observations. Environmental Science & Technology, 2009, 43, 2443-2449.	10.0	365
89	Source Apportionment of Fine (PM <sub>1.8</sub> ) and Ultrafine (PM <sub>0.1</sub> ) Airborne Particulate Matter during a Severe Winter Pollution Episode. Environmental Science & Technology, 2009, 43, 272-279.	10.0	69
90	Assessing positive matrix factorization model fit: a new method to estimate uncertainty and bias in factor contributions at the measurement time scale. Atmospheric Chemistry and Physics, 2009, 9, 497-513.	4.9	38

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91	Source Apportionment of in Vitro Reactive Oxygen Species Bioassay Activity from Atmospheric Particulate Matter. <i>Environmental Science &amp; Technology</i> , 2008, 42, 7502-7509.	10.0	156
92	Size-Resolved Source Apportionment of Airborne Particle Mass in a Roadside Environment. <i>Environmental Science &amp; Technology</i> , 2008, 42, 6580-6586.	10.0	39
93	A Macrophage-Based Method for the Assessment of the Reactive Oxygen Species (ROS) Activity of Atmospheric Particulate Matter (PM) and Application to Routine (Daily-24 h) Aerosol Monitoring Studies. <i>Aerosol Science and Technology</i> , 2008, 42, 946-957.	3.1	142
94	Size Distribution of Trace Organic Species Emitted from Light-Duty Gasoline Vehicles. <i>Environmental Science &amp; Technology</i> , 2007, 41, 7464-7471.	10.0	28
95	Size Distribution of Trace Organic Species Emitted from Heavy-Duty Diesel Vehicles. <i>Environmental Science &amp; Technology</i> , 2007, 41, 1962-1969.	10.0	62
96	Use of Synthetic Data to Evaluate Positive Matrix Factorization as a Source Apportionment Tool for PM <sub>2.5</sub> Exposure Data. <i>Environmental Science &amp; Technology</i> , 2006, 40, 1892-1901.	10.0	46
97	Coupling between Land Ecosystems and the Atmospheric Hydrologic Cycle through Biogenic Aerosol Pathways. <i>Bulletin of the American Meteorological Society</i> , 2005, 86, 1738-1742.	3.3	43
98	Source Contributions to the Mutagenicity of Urban Particulate Air Pollution. <i>Journal of the Air and Waste Management Association</i> , 2005, 55, 399-410.	1.9	30
99	Drop size-dependent chemical composition of clouds and fogs. Part II: Relevance to interpreting the aerosol/trace gas/fog system. <i>Atmospheric Environment</i> , 2004, 38, 1403-1415.	4.1	44
100	Letters to the Editor. <i>Journal of the Air and Waste Management Association</i> , 2002, 52, 1133-1138.	1.9	0
101	Organic compounds in radiation fogs in Davis (California). <i>Atmospheric Research</i> , 2002, 64, 99-108.	4.1	64
102	Characterization of organic aerosol in Big Bend National Park, Texas. <i>Atmospheric Environment</i> , 2002, 36, 5807-5818.	4.1	85
103	Indoor Pollutant Levels from the Use of Unvented Natural Gas Fireplaces in Boulder, Colorado. <i>Journal of the Air and Waste Management Association</i> , 2001, 51, 1654-1661.	1.9	13
104	Title is missing!. <i>Water, Air and Soil Pollution</i> , 2001, 1, 303-312.	0.8	26
105	Trends in Fine Particle Concentration and Chemical Composition in Southern California. <i>Journal of the Air and Waste Management Association</i> , 2000, 50, 43-53.	1.9	109
106	Bioassay-Directed Chemical Analysis of Los Angeles Airborne Particulate Matter Using a Human Cell Mutagenicity Assay. <i>Environmental Science &amp; Technology</i> , 1998, 32, 3502-3514.	10.0	144
107	Human Cell Mutagens in Los Angeles Air. <i>Environmental Science &amp; Technology</i> , 1997, 31, 438-447.	10.0	24
108	Seasonal and spatial variation of the bacterial mutagenicity of fine organic aerosol in southern california.. <i>Environmental Health Perspectives</i> , 1996, 104, 428-436.	6.0	19

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109	Bacterial Mutagenicity of Urban Organic Aerosol Sources in Comparison to Atmospheric Samples. Environmental Science & Technology, 1994, 28, 2014-2024.	10.0	36
110	Respeciation of organic gas emissions and the detection of excess unburned gasoline in the atmosphere. Environmental Science & Technology, 1992, 26, 2395-2408.	10.0	175